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Kathy Manke Avago Technologies Limited 4380 Ziegler Road Fort Collins, CO 80525			EXAMINER CALLAWAY, JADE R	
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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/804,286
Filing Date: March 18, 2004
Appellant(s): OON ET AL.

Guy K. Clinger (42,422)
For Appellant

EXAMINER'S ANSWER

MAILED
JAN 24 2008
GROUP 2800

This is in response to the appeal brief filed December 7, 2007 (12/7/07) appealing from the Office action mailed September 9, 2007 (9/7/07).

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,166,784 SUDA et al. 11-1992

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-2, 4-6 are rejected under 35 U.S.C. 102(b). Claims 3, 7-11 are rejected under 35 U.S.C. 103(a). These rejections are set forth in the prior Office Action dated 9/7/07, and copied *infra*.

Claims 1-2, 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Suda (US 5,166,784).

Regarding claim 1, Suda discloses a color filter assembly comprising:

a primary filter layer 51 on a sensor 5 (Fig. 2), comprising three spatially separated primary color filters 531, 532, and 533, each of which has a transmission spectrum depicted in Fig. 4 or Fig. 10, the filter layer 51 comprising a transmission band in a first band of wavelengths around a first characteristic wavelength of 538 nm (depicted by 16') at a first location and a second transmission band of wavelengths around a second characteristic wavelength of 631 nm (depicted by 17') at a second location;

a first trim filter 7 (Fig. 13) comprising a layer of material that overlies the first and second locations and having a transmission spectrum which is uniform over all the color filters of layer 51 and preferentially attenuates light at a first trim wavelength of 571 nm (Fig. 12), wherein said first trim wavelength is between the first and second characteristic wavelengths (lines 12-47, col. 3, lines 28-37, col. 4, lines 1-8, col. 7, line

66, col. 9 to line 32, col. 10). Furthermore, the location of the (first) null in the transmission function of the first trim filter is such that it affects (i.e., minimizing the transmission of light) the (right/falling) edge of curve 16' of the first band of wavelengths, and it also affects the (left/rising) edge of curve 17' of the second band of wavelengths (see Figs. 10, 12). It is noted that the combined effect of the two layers of filtering is to produce a target transmission function transmitting at desired wavelengths.

Regarding claim 2, the first trim filter further attenuates light at a second trim wavelength of 686 nm (Fig. 12), said first trim wavelength being less than one of the first and second characteristic wavelengths, and the second trim wavelength is greater than either first or second characteristic wavelengths.

Regarding claims 4-5, the primary filter layer 51 comprises colored dyes (lines 27-28, col. 3).

Regarding claim 6, the color filter assembly of Suda, further comprises a second trim filter 6, said second trim filter comprising a layer 61 of material that preferentially attenuates light at a second wavelength of 900 nm that is different from each of the characteristic wavelengths and the first trim wavelength (Fig. 8, lines 54-62, col. 4).

Claims 3, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda (US 5,166,784).

Regarding claim 3, Suda discloses all the limitations of said claim except for teaching that the filter 7 having the transmission spectrum of Fig. 12 is an interference filter instead of a gelatin (i.e., absorption) filter, see lines 38-39, col. 9. However, Suda

does teach that the other color filter 62 comprises an interference filter (Fig. 6, lines 39-42, col. 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the filter 7 as an multilayer interference filter, since Official Notice is taken about the wide use of interference color filters for preferentially transmitting light in selective wavelength bands. Interference filters are advantageous compared to absorption filters because they offer great flexibility in designing the desired transmission spectrum according to several controllable parameters (e.g., number of layers, material and thickness of said layers).

Regarding claims 7-11, Suda discloses all the limitations of said claims except for teaching that the filtering operation is achieved by placing the color filters 51 between filters 6 and 7 in a laminated fashion, instead of the disclosed order of filters 6 and 7 being on top of filter layer 51. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the filters 6, 51 and 7, in that order integral with each other, since it has been held that making in one piece an article which has formerly been formed in multiple pieces involves only routine skill in the art, see *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965), and that a mere rearrangement of element without modification of the operation of the device involves only routine skill in the art, see *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). Here, all the filters in Suda's system operate in an additive fashion (i.e., all their transmission spectra are superimposed on each other to produce a composite spectrum for the light that is

incident onto the photoelectric elements). Furthermore, an integral filter structure is more compact and does not require optical alignment.

(10) Response to Argument

The Appellant's arguments and remarks filed 12/7/07 in response to the final rejection, dated 9/7/07, have been fully considered, however they are not found persuasive.

I. Response to Rejection of claims 1, 2 and 4-6 under 35 U.S.C. 102(b) (see pages 6-11 of Appellants' brief filed 12/7/07)

It is the Appellants' belief that Suda et al. does not disclose or suggest that the *"first trim filter transmission function is selected to selectively block light at edges of at least one of said first and second bands of wavelengths that is not blocked by said primary filter layer transmission function, whereby said primary filter layer and said first trim filter together have a target transmission function transmitting a desired set of wavelengths."* More specifically Appellants' argue that the transmission curves as disclosed by Suda et al. in figures 10 and 12, only consider a small portion of the transmission curve of filter 7 and that the plots do not have sufficient detail or clarity to use as a basis for attributing purpose and functionality. However, it is the belief of the Examiner that Suda et al. does teach that a first trim filter transmission function is selected to selectively block light at edges of said first and second bands of wavelengths that is not blocked by said primary filter layer transmission function, whereby said primary filter layer and said first trim filter together have a target transmission function transmitting a desired set of wavelengths. The Examiner also

believes that the transmission curves as disclosed by Suda et al. in figures 10 and 12 have enough clarity and detail to sufficiently show a large enough portion of the transmission curve of filter 7 to show that the structure of Suda et al. is capable of performing the recited function as required by Appellants' claims.

As previously set forth in pages 2-3 of the Office Action dated 9/7/07, figures 10 and 12 of Suda et al. were broadly and reasonably interpreted to read on the trimming functionality of the Appellants' claims. As Suda et al. teaches, the location of the (first) null in the transmission function 7 of the first trim filter is such that it affects (i.e., minimizing the transmission of light) the (right/falling) edge of curve 16' of the first band of wavelength, and it also affects the (left/rising) edge of curve 17' of the second band of wavelength (see figures 10 and 12 of Suda et al. which have been combined and annotated as Figure 1 below for convenience). The trimmed portion is circled in figure 1 wherein the transmission filter is selected to selectively block light at edges of the first and second bands of wavelengths that is not blocked by the primary filter layer transmission function to produce a target transmission function transmitting at desired wavelengths.

Additionally, Appellants argue that although Suda et al. shows a minimum in the transmission curve of filter 7 that attenuates wavelengths along the falling edge of curve 16' and the rising curve of 17', it only considers a small portion of the transmission curve of filter 7, ignoring the rest and that it does not have sufficient clarity or detail to use as a basis for attributing purpose and functionality. With regard to these arguments the Examiner respectfully disagrees. Claim 1 requires a primary filter layer that transmits

light in a first band of wavelengths about a first characteristic wavelength (16') at a first location in the primary filter layer and that transmits light in a second band of wavelength about a second characteristic wavelength (17') in a second location in the primary filter layer; and a first trim filter (7) that overlies the edge portions of first and second locations and that preferentially attenuates light at a first trim wavelength between the first and second characteristic wavelengths (circled in a dotted line), wherein the trim filter selectively blocks light at the edges of the first and second bands of wavelengths that is not blocked by the primary filter layer transmission function. All of these features are believed to be shown in figure 1 below. The transmission curves of the primary filter layer and the trim filter layer overlap as needed for light to be blocked/attenuated.

The Appellants further argue that filter 7's application to figure 4 of Suda et al. is also ignored. However, the Examiner notes that this argument is moot. Although a filter element may be used in figure 4 of Suda et al., as noted by Appellants, the Examiner has relied upon a different embodiment (i.e. figures 10 and 12) in the rejections. The versatility of the filter is irrelevant with respect to the current rejection of the claims.

In addition, Appellants argue that Suda et al. must disclose, and have the same exact purpose and functionality as the instant application, to anticipate the claimed subject matter. However, this is not the case. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir 1993). See also MPEP 2145. The transmission curves of the filter 7, as shown in figure 1 below,

provides the same trimming function as Appellants' claim. Comparing figure 1 with Appellants' figure 5, (which has been provided and annotated as figure 2 below for convenience), shows that both Suda et al. and the Appellants similarly depict a null in the transmission function of the first trim filter such that it affects (i.e., minimizing the transmission of light) the (right/falling) edge of curve of a first characteristic band of wavelength, and it also affects the (left/rising) edge of curve of a second characteristic band of wavelength. As such, the transmission curves of the filter of Suda et al. functions to selectively block light at the edges of first and second bands of wavelengths that is not blocked by the primary filter layer transmission function, as recited by Appellants' claims.

Additionally the Appellants argue that Suda et al. does not disclose filter 7 to be a trim filter as recited in Appellants' claims. The Examiner respectfully disagrees. The structure of Suda et al., as shown in figure 1 below, performs the same trimming function as the filter of Appellants' claims; in so far as it selectively blocks light at the edges of first and second bands of wavelengths that is not blocked by the primary filter layer transmission function. As such, filter 7 of Suda et al. is a trim filter.

With regard to the rejection of claims 2 and 4-6 on pages 2-3 of the Office Action dated 9/7/07, since Appellants' only argument is that these claims are allowable based on their dependency to claim 1, the aforementioned rejection of these claims stand since claimed 1 remains rejected.

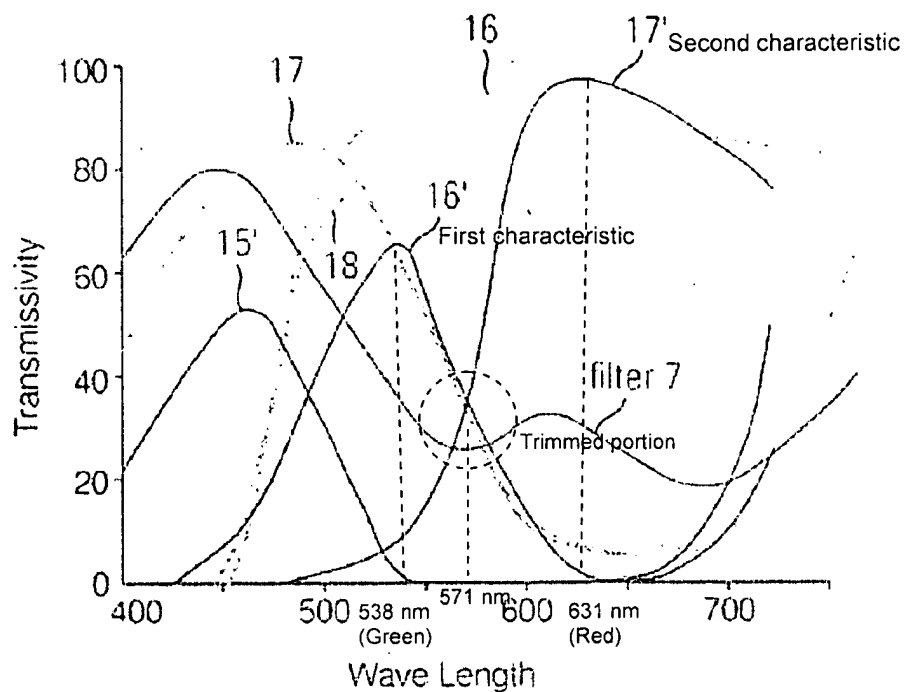


Figure 1: Prior Art Reference Suda et al.
(Figures 10 and 12 combined)

TRANSMISSION

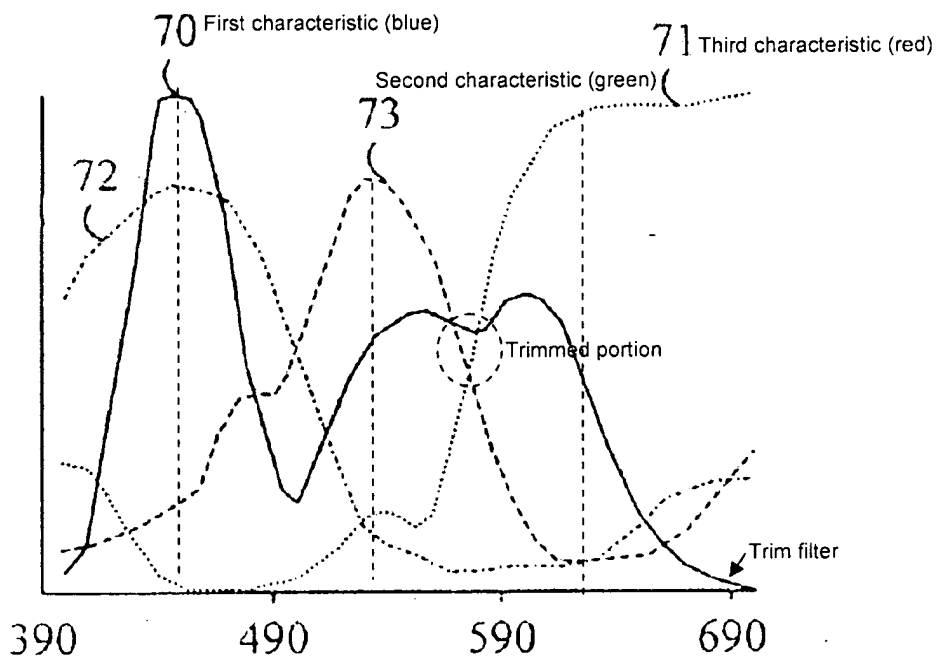


Figure 2: Appellants' Figure 5

II. Response to Rejection of claims 3 and 7-11 under 35 U.S.C. 103(a) (see pages 12-13 of Appellants' brief filed 12/7/07)

With regard to the rejection of claims 3 and 7 on pages 4-5 of the Office Action dated 9/7/07, since Appellants' only argument is that these claims are allowable based on their dependency to claim 1, the aforementioned rejection of these claims stand since claimed 1 remains rejected.

Further, Appellants repeat the arguments for allowability as set forth on pages 6-11 of Appellants' brief with respect to claim 1, but specifically direct the arguments to the method set forth in claim 8. The Appellants additionally argue that Suda et al. does not disclose *bonding a first trim filter layer to a substrate and bonding a primary filter layer to the first trim filter layer*. However, it is the belief of the Examiner that the modified Suda et al. reference discloses bonding a first trim filter layer to a substrate and bonding a primary filter layer to the first trim filter layer.

For convenience the arguments and response to claim 1 has been copied below:

It is the Appellants' belief that Suda et al. does not disclose or suggest that the *"first trim filter transmission function is selected to selectively block light at edges of at least one of said first and second bands of wavelengths that is not blocked by said primary filter layer transmission function, whereby said primary filter layer and said first trim filter together have a target transmission function transmitting a desired set of wavelengths."* More specifically Appellants' argue that the transmission curves as disclosed by Suda et al. in figures 10 and 12, only consider a small portion of the transmission curve of filter 7 and that the plots do not have sufficient detail or clarity to

use as a basis for attributing purpose and functionality. However, it is the belief of the Examiner that Suda et al. does teach that a first trim filter transmission function is selected to selectively block light at edges of said first and second bands of wavelengths that is not blocked by said primary filter layer transmission function, whereby said primary filter layer and said first trim filter together have a target transmission function transmitting a desired set of wavelengths. The Examiner also believes that the transmission curves as disclosed by Suda et al. in figures 10 and 12 have enough clarity and detail to sufficiently show a large enough portion of the transmission curve of filter 7 to show that the structure of Suda et al. is capable of performing the recited function as required by Appellants' claims.

As previously set forth in pages 2-3 of the Office Action dated 9/7/07, figures 10 and 12 of Suda et al. were broadly and reasonably interpreted to read on the trimming functionality of the Appellants' claims. As Suda et al. teaches, the location of the (first) null in the transmission function 7 of the first trim filter is such that it affects (i.e., minimizing the transmission of light) the (right/falling) edge of curve 16' of the first band of wavelength, and it also affects the (left/rising) edge of curve 17' of the second band of wavelength (see figure 1 above). The trimmed portion is circled in figure 1 wherein the transmission filter is selected to selectively block light at edges of the first and second bands of wavelengths that is not blocked by the primary filter layer transmission function to produce a target transmission function transmitting at desired wavelengths.

Additionally, Appellants argue that although Suda et al. shows a minimum in the transmission curve of filter 7 that attenuates wavelengths along the falling edge of curve

16' and the rising curve of 17', it only considers a small portion of the transmission curve of filter 7, ignoring the rest and that it does not have sufficient clarity or detail to use as a basis for attributing purpose and functionality. With regard to these arguments the Examiner respectfully disagrees. Claim 1 requires a primary filter layer that transmits light in a first band of wavelengths about a first characteristic wavelength (16') at a first location in the primary filter layer and that transmits light in a second band of wavelength about a second characteristic wavelength (17') in a second location in the primary filter layer; and a first trim filter (7) that overlies the edge portions of first and second locations and that preferentially attenuates light at a first trim wavelength between the first and second characteristic wavelengths (circled in a dotted line), wherein the trim filter selectively blocks light at the edges of the first and second bands of wavelengths that is not blocked by the primary filter layer transmission function. All of these features are believed to be shown in figure 1 above. The transmission curves of the primary filter layer and the trim filter layer overlap as needed for light to be blocked/attenuated.

The Appellants further argue that filter 7's application to figure 4 of Suda et al. is also ignored. However, the Examiner notes that this argument is moot. Although a filter element may be used in figure 4 of Suda et al., as noted by Appellants, the Examiner has relied upon a different embodiment (i.e. figures 10 and 12) in the rejections. The versatility of the filter is irrelevant with respect to the current rejection of the claims.

In addition, Appellants argue that Suda et al. must disclose, and have the same exact purpose and functionality as the instant application, to anticipate the claimed

subject matter. However, this is not the case. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See **In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir 1993)**. See also **MPEP 2145**. The transmission curves of the filter 7, as shown in figure 1 above, provides the same trimming function as Appellants' claim. Comparing figure 1 with Appellants' figure 5, (see figure 2 above), shows that both Suda et al. and the Appellants similarly depict a null in the transmission function of the first trim filter such that it affects (i.e., minimizing the transmission of light) the (right/falling) edge of curve of a first characteristic band of wavelength, and it also affects the (left/rising) edge of curve of a second characteristic band of wavelength. As such, the transmission curves of the filter of Suda et al. functions to selectively block light at the edges of first and second bands of wavelengths that is not blocked by the primary filter layer transmission function, as recited by Appellants' claims.

Additionally the Appellants argue that Suda et al. does not disclose filter 7 to be a trim filter as recited in Appellants' claims. The Examiner respectfully disagrees. The structure of Suda et al., as shown in figure 1 above, performs the same trimming function as the filter of Appellants' claims; in so far as it selectively blocks light at the edges of first and second bands of wavelengths that is not blocked by the primary filter layer transmission function. As such, filter 7 of Suda et al. is a trim filter.

Appellants also argue that Suda et al. does not disclose or suggest bonding a first trim filter layer to a substrate and bonding a primary layer to the first trim filter layer. Though Suda et al. does not explicitly disclose this feature, the Examiner additionally

notes that Claims 3 and 7-11 were rejected under 35 U.S.C. 103(a) and not 35 U.S.C. 102. The Examiner is relying on the combined teachings of both Suda et al. and the case law cited. In addition, one cannot show nonobviousness by attacking references individually where the rejections are based on the combination of references. See **In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)**. The Examiner respectfully disagrees that the modified Suda et al. reference does not disclose bonding a trim filter layer to a substrate and bonding a primary filter layer to the trim filter. As previously set forth on pages 4-5 of the Office Action dated 9/7/07, it was noted that it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the filters 6, 51 and 7, in that order integral with each other, since it has been held that making in one piece, an article which has formerly been formed in multiple pieces, involves only routine skill in the art, see **In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965)**. Appellants have not provided any evidentiary support to the contrary.


With regard to the rejection of claims 9-11 on pages 4-5 of the Office Action dated 9/7/07, since Appellants' only argument is that these claims are allowable based on their dependency to claim 8, the aforementioned rejection of these claims stand since claimed 8 remains rejected.


(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

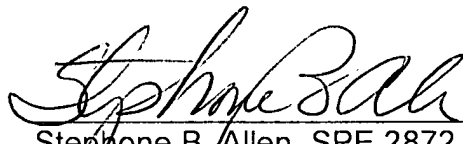
For the above reasons, it is believed that the rejections should be sustained.

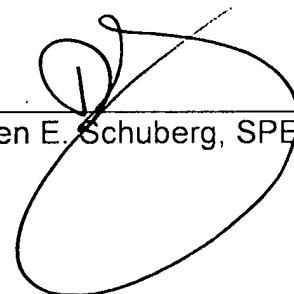
Respectfully submitted,


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